

REMARKS

Claims 1, 4-6, 8-10 and 15 are now pending in the application. Claims 1, 10 and 15 are amended herein. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 4, 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takizawa et al. (U.S. Pat. No. 6,357,849) in view of Yoshiyama et al. (U.S. Pat. Pub. No. 2002/0140750) and further in view of Culpovich et al. (U.S. Pat. No. 6,551,521). Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Takizawa et al. (U.S. Pat. No. 6,357,849) in view of Yoshiyama et al. (U.S. Pat. Pub. No. 2002/0140750) and further in view of Culpovich et al. (U.S. Pat. No. 6,551,521) and further in view Cleary et al. (U.S. Pat. Pub. No. 2002/0149660). These rejections are respectfully traversed.

In response to the Examiner's argument that the limitation of "performing the calibration of receiver considering the current condition of the receiver and the current influences of the circumstances surrounding the receiver, on the receiver" is not found in the claims, the Applicant added this limitation into claims 1, 10, and 15. Accordingly, since the claim amendments are made in accordance with suggestion by the Examiner, the Applicant believes that they are appropriate.

Each of the currently amended claims 1, 10, and 15 includes a feature of "***calibration of said receiver is performed*** immediately before execution of a nozzle detection operation ***so as to consider the current condition of said receiver and the***

current influences on said receiver of the circumstances surrounding said receiver,
said calibration including resetting of a gain data at present of said receiver".

In the outstanding Office Action, the Examiner stated that Applicant's argument could not be accepted since the previous claims did not include the basis for the argument. In response, Applicant has amended the independent claims 1, 10, and 15 to clearly indicate the basis for the argument.

None of the citations discloses performing calibration of the receiver considering the current condition of the receiver and the current influences of the circumstances on the receiver due to the reasons explained in Applicant's previous response. That is, the device manufacturing apparatus according to independent claim 1 of the present application includes a feature that "said controller performs calibration of said receiver **immediately** before execution of a nozzle detection operation, ***said calibration including resetting of a gain data at present of said receiver***".

Similarly, the device manufacturing method according to independent claim 10 of the present application includes a feature that "calibration of said receiver is performed **immediately** before execution of a nozzle detection operation, ***said calibration including resetting of a gain data at present of said receiver***".

As stated at page 5, line 21 to page 6, line 4, in the original specification: "For the timing for performing the calibration, preferably this is performed **immediately before the detection operation**. By so doing, when performing a detection operation of non-performing nozzles a plurality of times, there are cases where the receiving sensitivity of the receiver, or the output signal value become different for each of the non-performing nozzle detections due for example to the temperature (heat) of the

receiver, or to noise attributable to the surrounding equipment (noise generating sources). However, by performing calibration of the receiver before each execution of the non-performing nozzle detection operation, the detection accuracy of the receiver can be improved."

Therefore, the present invention according to independent claims 1, 10 and 15 includes the feature that **the receiver is calibrated immediately before the nozzle detection operation**. Independent claims 1, 10 and 15) also include the feature that ***the calibration includes resetting of a gain data at present of said receiver***. With this feature, the claimed invention enables calibrating the receiver **immediately** before execution of the nozzle detection operation, while considering the influences on the sensitivity or the like of the receiver, noise of equipment (noise generating sources) near the receiver, or the temperature (heat) of the receiver itself. Since **the receiver is calibrated immediately before the nozzle detection operation**, it is possible to perform a calibration of the receiver considering **the current condition** of the receiver and **the current influences** of the circumstances surrounding the sensor, on the receiver.

In contrast, the device and the method disclosed in Yoshiyama et al. cannot perform a calibration of the receiver considering the current condition of the receiver and the current influences of the circumstances on the receiver. That is, Yoshiyama et al. clearly discloses in the ABSTRACT that "An actual detecting position P1 is found based on the level of reflected light. The difference between the theoretical detecting position P2 and the actual detecting position P1 is calculated and *is stored as the calibration value α in a first calibration data memory M1*. Accordingly, the actual

detecting position P1 is set as $P2 \pm \alpha$. *The calibration value α is used in a calibration process to calibrate the detecting position*, so that the level of reflected light can be detected with accuracy". That is, since the calibration process of Yoshiyama et al. uses the calibration value α which was obtained in advance to perform the calibration process (that is, prior to running the image forming device), the calibration value α cannot consider ***the current condition*** of the sensor (receiver) and ***the current influences*** of the circumstances surrounding the sensor, on the sensor (receiver). That is, the device and the method disclosed in Yoshiyama et al. cannot perform a calibration of the sensor (receive) considering ***the current condition*** of the sensor (receive) and ***the current influences*** of the circumstances surrounding the sensor, on the sensor (receive).

Culpovich et al. is insufficient to cure the above defect of Yamamoto et al. due to at least the following reasons. Culpovich et al. discloses an automatic etchant regeneration system with a sensor for monitoring etchant composition. The description pointed out by the Examiner of Culpovich et al. in col. 10, lines 49-62 mentions that "the system checks the calibration of the sensors (Step 58). If the calibration of the sensors is okay..., then the system resets, and returns to the first question. If the calibration is not okay..., then the system assumes that an error is present and summons help". This description clearly indicates that this process is not calibrating a sensor, but for selecting necessary actions (that is, whether resetting the system or informing an error) depending on the result of the calibration.

Furthermore, Culpovich et al. also states that: "As a result, appropriate calibration of the detector need *only be done once or relatively few times in the lifetime of the sensor*" (refer to column 7, lines 28 to 30); and "the photodetector offers improved

accuracy and *need only be calibrated once or relatively few times in the lifetime of the sensor*" (refer to column 7, lines 48 to 50). These descriptions clearly indicate that the sensor in the system almost never needs calibrations; and furthermore, Culpovich et al. is silent about the influences on the sensor of heat generated by the sensor and noise surrounding the sensor. Therefore, Culpovich et al. cannot provide any motivation to achieve the above-mentioned advantageous effect (i.e., "performing the calibration of the receiver considering ***the current condition*** of the receiver and ***the current influences*** of the circumstances surrounding the receiver, on the receiver").

As explained in the above, the present invention according to independent claims 1, 10 and 15 includes the above-mentioned features which are neither disclosed nor suggested in Takizawa et al., Yoshiyama et al., Culpovich et al., Bruch et al., Hah or Cleary et al., which results in the above-mentioned technical advantageous effects.

Accordingly, the present invention according to each of the currently amended independent claims 1, 10, and 15 includes the above-mentioned feature which is neither disclosed nor suggested in the citations, and results in advantageous effects. Therefore, Applicant believes that the currently amended independent claims 1, 10, and 15 should be allowable.

Claims 4 and 9 depend from claim 1 and should be allowable due to their dependency on allowable independent claim 1.

Claims 5 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takizawa et al. (U.S. Pat. No. 6,357,849) in view of Yoshiyama et al. (U.S. Pat. Pub. No. 2002/0140750) and further in view of Culpovich et al. (U.S. Pat. No. 6,551,521) and further in view Bruch et al. (U.S. Pat. No. 6,814,422). This rejection is

respectfully traversed. Claims 5 and 8 depend from claim 1 and should be allowable due to their dependency on allowable independent claim 1.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Takizawa et al. (U.S. Pat. No. 6,357,849) in view of Yoshiyama et al. (U.S. Pat. Pub. No. 2002/0140750) and further in view of Culpovich et al. (U.S. Pat. No. 6,551,521) and further in view Hah (U.S. Pat. No. 6,371,590). This rejection is respectfully traversed. Claim 6 depends from claim 1 and should be allowable due to its dependency on allowable independent claim 1.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: July 16, 2008

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